Articles

Patterns of Primary Care of Patients Infected With Human Immunodeficiency Virus

MARJORIE D. WENRICH *and* PAUL G. RAMSEY, MD, *Seattle, Washington*

To determine the patterns of care of patients infected with the human immunodeficiency virus (HIV), data from 2 sources were analyzed. Initial data obtained from the Washington State HIV/Acquired Immunodeficiency Syndrome (AIDS) Epidemiology Unit indicate that 46% of patients with class IV AIDS were seen by physicians who reported fewer than 5 patients with AIDS, and 68% of all Washington physicians who reported treating patients with AIDS have reported only 1 patient. Subsequent data obtained from a questionnaire distributed in 4 Northwest states suggest that 74% of primary care internists and 73% of family practitioners have some experience in caring for patients with HIV infection, but most of these physicians report fewer than 6 patients in the past 2 years. Although most providers seeing large numbers of HIV-infected patients in their practices were based in the region's major metropolitan area, 59% of the internists and 55% of the family practitioners surveyed outside of the metropolitan area had seen at least 1 HIV-infected patient in their practices. These results suggest that primary care physicians with relatively little experience treating HIV infection are providing care for a large number of HIV-infected persons. Further study is needed to determine the extent and quality of care provided.

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In the next five to ten years, primary care physicians probably will play an increasingly important role in the identification and care of patients infected with the human immunodeficiency virus (HIV).[1-4] This increased role has been predicted based on an increase in the number of patients with symptomatic HIV infection and changing patterns of health care provision, including a shift in the principal care setting from inpatient to outpatient.[5] In addition, advances in medical therapy, such as the early use of zidovudine, are resulting in increased longevity among HIV-infected patients.[6-9] Increasingly, the acquired immunodeficiency syndrome (AIDS) may be redefined as a chronic disease with periods of acute infection interspersed with periods of maintenance care.[5,10,11]

The willingness and preparedness of primary care physicians to assume an increased role in the identification and management of patients with or at risk for HIV infection have not been established. Concern or fear associated with the treatment of HIV-infected patients by health care professionals has been well documented,[12,13] and stress and fatigue associated with treating AIDS patients are additional factors that may deter physicians from accepting patients with HIV infection.[14] A survey conducted in Los Angeles in 1985 indicated that many physicians believed that they lacked experience and knowledge to treat AIDS,[15] and data from a telephone survey conducted in California in 1984 suggest a lack of necessary knowledge and skills related to AIDS among primary care physicians.[16]

Few data are available concerning the patterns of primary care of patients with HIV infection. In the California telephone survey, about 10% of physicians interviewed in counties with major metropolitan centers had patients from their practices diagnosed as having AIDS by Centers for Disease Control (CDC) criteria, and 4% of those practicing in counties without major metropolitan centers had patients from their practices diagnosed as having AIDS.[16] Surveyed physicians expressed an interest in the establishment of special clinics for AIDS patients staffed by physicians with particular expertise in this disease. Since this survey was completed, the number of patients with AIDS has increased dramatically, and more primary care physicians may have experience with HIV-infected patients than were recognized previously.

What are the current patterns of care in different communities for patients with HIV infection? Is the care of HIV-infected patients concentrated in the practices of a small number of physicians in the same manner that a few hospitals are treating a large number of patients with AIDS?[17] To address these questions, data were recently obtained to assess the patterns of care for HIV-infected patients in the Pacific Northwest.

Methods

To ascertain the distribution of reported patients with AIDS among physicians in all specialties, data were obtained from the Washington State HIV/AIDS Epidemiology Unit concerning the number of physicians in Washington State who reported CDC class IV AIDS cases between January 1982 and June 30, 1989. The HIV/AIDS Epidemiology Unit, which is the state's surveillance unit for AIDS, uses a number of active and passive methods for collecting case reports. These include record review, death certificate review, and outside audit of physicians' offices. After obtaining these data, in July 1989 a survey was mailed from the University of Washington to 500 randomly selected internists and family practitioners in Washington, Alaska, Montana, and Idaho who were identified through University of Washington clinical faculty records and telephone directories to determine patterns of primary care throughout the region.

From the Department of Medicine, University of Washington School of Medicine, Seattle. Dr Ramsey is a Henry J. Kaiser Family Foundation Faculty Scholar in General Internal Medicine. The views expressed herein are those of the authors and do not necessarily reflect the views or policies of the Henry J. Kaiser Family Foundation.

Reprint requests to Paul G. Ramsey, MD, Department of Medicine, RG-20, University of Washington, Seattle, WA 98195.

ABBREVIATIONS USED IN TEXT

AIDS = acquired immunodeficiency syndrome
CDC = Centers for Disease Control
HIV = human immunodeficiency virus
SD = standard deviation

A cover letter that accompanied the questionnaire described the survey as an attempt to obtain information about the practice patterns of primary care physicians and medical subspecialists in the Northwest. Different questionnaires were mailed to internists and family practitioners.

The questionnaire to internists contained questions about physicians' practice characteristics, including the percentage of a physician's patients for whom the physician serves as the principal physician; the percentage of the physician's patients for whom only subspecialty care is provided and for whom general care is not provided; the percentage of the physician's professional patient-related activities devoted to general internal medicine practice, subspecialty practice, and noninternal medicine specialty practice; and the year of graduation from medical school. Information was obtained concerning the state of practice and whether the physician resided or practiced in the major metropolitan area in the region (Seattle and Tacoma) or outside of this metropolitan area. To determine patterns of care, physicians were asked to identify the approximate number of patients they had treated in the past two years in several categories, including HIV infection with or without AIDS.

The questionnaire to family practitioners contained the same questions concerning patterns of care. Family practitioners were not asked about the percentage of patients for whom they served as principal physician or the percentage of patients for whom only subspecialty care is provided. They were asked to identify the percentage of their professional patient-related activities devoted to family practice and to other specialties, and the year of graduation from medical school was also requested.

Complete responses were received from 59% of physicians surveyed. Response rates for internists and family practitioners were similar (56% for internists and 62% for family practitioners). Because of the anonymous nature of the survey, no follow-up was possible, and it was not possible to assess the representativeness of respondents compared with nonrespondents. To limit the analysis to primary care physicians, only internists who indicated that they serve as principal physician for at least 50% of their patients were included in analyses. Of the responding internists, 84% met this criterion as primary care physicians. Four family practitioners who spent most of their time in another specialty (emergency medicine or occupational medicine) were excluded from analyses. The results presented here are based on the responses of 156 internists and 99 family practitioners.

The number of HIV-infected patients seen per physician was tabulated from survey data as the sum of HIV-infected patients with or without AIDS seen by a physician in the past two years. Data analysis was performed with the Statistical Package for the Social Sciences personal computer software. Data were analyzed using Student's *t* test to determine differences between internists and family practitioners and one-way analysis of variance to determine differences between groups of physicians based on the number of HIV-infected patients treated in the past two years. For group comparisons for most analyses, physicians were divided into the following groups: 0 HIV-infected patients seen, 1 to 5 HIV-infected patients seen, 6 to 20 HIV-infected patients seen, and more than 20 HIV-infected patients seen. The α level for a significant difference was set at $P < .05$.

TABLE 1.—*Cases of Class IV Acquired Immunodeficiency Syndrome (AIDS) Reported by Washington State Physicians**

AIDS Cases Reported, No.	*Physicians, No.*
1	355
2-5	116
6-10	31
11-20	11
21-80	8

*Physicians from all medical specialties are represented in these data provided by the Washington State HIV/AIDS Epidemiology Unit for cases reported from January 1982 to June 1989.

Results

Based on data obtained from the Washington State HIV/AIDS Epidemiology Unit, 521 physicians in Washington in all medical specialties and all types of practice reported treating at least one patient with class IV AIDS between January 1982 and June 30, 1989. Of these 521 physicians, 471 reported treating fewer than 6 patients, 42 reported 6 to 20 patients, and 8 reported more than 20 patients (Table 1). No information was available concerning the inpatient versus outpatient status of these patients. Of the 1,382 cases reported, 633 patients (46%) were seen by physicians who had reported fewer than 5 class IV AIDS patients.

Responses to the questionnaire, which was mailed to randomly selected primary care physicians, showed that 26% of internists and 27% of family practitioners indicated that they had seen no HIV-infected patients, either with or without AIDS, in their practices in the past two years; 14% of internists and 19% of family practitioners reported seeing one HIV-infected patient in the past two years. Among internists, 43% had seen 1 to 5 HIV-infected patients, 19% had seen 6 to 20 HIV-infected patients, and 13% had seen more than 20 HIV-infected patients in the past two years. Among family practitioners, 55% had seen 1 to 5 HIV-infected patients, 12% had seen 6 to 20 HIV-infected patients, and 6% had seen more than 20 HIV-infected patients in the past two years. These differences in experience with HIV-infected patients between internists and family practitioners were not statisti-

TABLE 2.—*Distribution of Seropositive Patients Without the Acquired Immunodeficiency Syndrome (AIDS) Among Providers Who Have Seen Small Numbers of HIV-Infected Patients*

HIV-Infected Patients Seen by Physician, No.	*Internists Who Saw Only Seropositive Patients Without AIDS, No.* (%)*	*Family Practitioners Who Saw Only Seropositive Patients Without AIDS, No.* (%)*	*Total, Both Specialties, %*
1	9/21 (43)	8/19 (42)	43
2	5/16 (31)	4/16 (25)	28
3	1/15 (7)	1/13 (8)	7
4	1/8 (13)	0/4 (0)	8
5	0 (0)	0 (0)	0

HIV = human immunodeficiency virus

*The numbers represent number of physicians in this category versus those responding to the question.

TABLE 3.—*Human Immunodeficiency Virus (HIV)-Infected Patients Seen by Primary Care Internists and Family Practitioners by Geographic Location**

Specialty	Number (%)† of HIV-Infected Patients Seen				
	0	1-5	6-20	>20	Total
Internists					
Metropolitan area‡	18 (18)	40 (40)	24 (24)	17 (17)	99
Other areas	22 (41)	24 (44)	5 (9)	3 (6)	54
Family practitioners					
Metropolitan area‡	9 (16)	33 (58)	9 (16)	6 (11)	57
Other areas	18 (45)	20 (50)	2 (5)	0 (0)	40

*Reported experience of internists and family practitioners from the region's major metropolitan area (Seattle-Tacoma) and for other areas in Washington, Alaska, Montana, and Idaho. Data shown are the number and percentage of physicians who reported caring for the indicated number of HIV-infected patients in the past 2 years.

†Percentages total more than or less than 100% because of rounding.

‡Comparison between major metropolitan area and other areas was significant ($P < .005$).

cally significant. Ten internists (6%) and four family practitioners (4%) reported seeing at least 50 HIV-infected patients in the past two years.

Most internists and family practitioners who reported caring for patients with HIV infection had seen HIV-infected patients both with and without AIDS (68% of internists and 61% of family practitioners). Among physicians who reported seeing 1 to 5 HIV-infected patients with or without AIDS, the number of physicians who had seen only seropositive patients without AIDS declined as the total number of HIV-infected patients seen increased (Table 2). There were no statistically significant differences between internists and family practitioners in total number of HIV-infected patients with or without AIDS seen. In addition, within the groups that had experience with HIV-infected patients, there was only one statistically significant difference between family practitioners and internists in number of patients seen. Among physicians who saw 6 to 20 HIV-infected patients with or without AIDS in the past two years, internists reported seeing a mean of 4.4 (standard deviation [SD] 2.8) patients with AIDS, and family practitioners reported seeing a mean of 2.6 (SD 1) patients with AIDS ($P = .005$).

Analysis of the practice characteristics of the primary care providers indicated that most primary care providers who care for large numbers of HIV-infected patients are based in the major urban area in the Northwest (Table 3). However, 44% of primary care internists and 50% of family practitioners in communities outside the major regional metropolitan area (Seattle and Tacoma) had seen 1 to 5 HIV-infected patients (24 of 54 internists, 20 of 40 family practitioners). In all, 15% of primary care internists and 5% of family practitioners in communities outside the Seattle-Tacoma area had seen more than 5 HIV-infected patients. There were no statistically significant differences between internists and family practitioners in the number of HIV-infected patients seen by geographic location.

One provider characteristic, the duration of time elapsed since completing medical school, was significantly related to the number of HIV-infected patients in the physicians' practices (Table 4). Internists who reported no personal experience in caring for HIV-infected patients had completed medical school a mean of 26 years previously, and internists who reported caring for more than five patients with HIV in the past two years completed medical school a mean of 15 years previously. The comparison of number of years elapsed since medical school graduation was statistically significant between internists with no experience with HIV-infected patients and all other groups of internists with experience with HIV-infected patients ($P < .001$). Although there was no statistically significant difference among family practitioners in the number of years since graduating from medical school for different groups with experience treating HIV-infected patients, family practitioners who had seen no HIV-infected patients tended to have graduated earlier than family practitioners in the groups with some experience caring for HIV-infected patients.

Discussion

Although the data presented here do not contain information about whether surveyed physicians provided continuous care for HIV-infected patients seen in their practices, the results of this study indicate that the care of HIV-infected patients is not consistently concentrated in the hands of a small number of physicians. Rather, in some communities, the care of patients with HIV infection is diffused among many providers, and many physicians report seeing a small number of patients with HIV infection in their practices.

Initial data obtained to determine the number of physicians in all specialties in Washington who reported treating CDC class IV AIDS patients at least once indicate that 46% of the patients for whom class IV AIDS has been reported in the state of Washington are seen by physicians who have reported treating fewer than five patients with AIDS. Furthermore, based on data obtained from the Washington State HIV/AIDS Epidemiology Unit, 68% of all Washington physicians who have reported patients with AIDS reported only one patient. Stimulated by these findings, survey data were obtained from primary care internists and family practitioners throughout the Pacific Northwest. Of physicians who responded to the survey, 74% of internists and 73% of family practitioners indicated some experience in caring for patients with HIV infection. Among the four groups delineated to

TABLE 4.—*Years Elapsed Since Medical School Graduation Among Primary Care Physicians Caring for Patients With Human Immunodeficiency Virus (HIV) Infection**

HIV-Infected Patients, No.	Years Elapsed Since Graduation	
	Internists	Family Practitioners
0	26±10†	19±11
1-5	19±10	15±10
6-20	15±6	13±6
>20	15±9	13±7

*Mean number of years elapsed since medical school graduation ± standard deviation are given for internists and family practitioners caring for HIV-infected patients.

†Comparison between internists who had cared for no HIV-infected patients and groups of physicians who had cared for HIV-infected patients was significant ($P < .001$).

represent experience in caring for patients with HIV infection, the largest group consisted of physicians who reported seeing one to five HIV-infected patients in the past two years. Among the physicians who had seen only small numbers of HIV-infected patients, as the number of HIV-infected patients seen increased, the percentage of HIV-infected patients with AIDS also increased. These findings suggest that among physicians who have seen a small number of HIV-infected patients, most do not immediately refer these patients elsewhere for specialized care. Thus, it appears that many primary care physicians who have little experience with the illness are providing some care for HIV-infected patients.

Family practitioners and internists surveyed reported seeing similar numbers of HIV-infected patients with and without AIDS in their practices. The only significant difference between the two specialties was among physicians who had treated 6 to 20 HIV-infected patients. In this group, internists saw more patients with AIDS than family practitioners did.

The group of primary care internists who reported no experience in treating HIV-infected patients differed from those physicians with experience in at least one characteristic. Internists with no HIV-infected patients graduated from medical school earlier than physicians who reported experience in caring for HIV-infected patients. This finding suggests that age may be a factor related to the primary care physician's preparedness or willingness to treat HIV-infected patients and is consistent with findings in two previous studies in which a small number of years in practice was associated with increased AIDS-related competence.[16,18] In another recent study, physicians who completed training in the past five years were more likely to care for patients with AIDS.[4] Further research is needed to determine the effects of age and number of years in practice on the quality and degree of care given to HIV-infected patients.

Our study has limitations that may affect the generalizability of results. The anonymous nature of data collection prevented any follow-up or comparison between respondents and nonrespondents. Data obtained from the Washington State HIV/AIDS Epidemiology Unit are for the use of physicians from all specialties and therefore do not specifically address primary care. In addition, results obtained in this study represent data only for the Pacific Northwest. Although this region has a large male homosexual population, the population of HIV-infected intravenous drug users is relatively small.[19] Patterns of medical care may be different for intravenous drug users than for other at-risk populations. An additional limitation of this study, as discussed earlier, is the lack of data regarding the extent of primary care provided by physicians to HIV-infected patients and whether and at what point referral to other physicians occurred.

Despite these limitations, the findings from this study raise important questions about the care of HIV-infected and at-risk patients that should be addressed in future studies. The role of the primary care physician in relation to these patients encompasses a broad possible range of responsibility, including prevention education and counseling, risk screening, identification, early management, counseling, and treatment or assessment and referral for advanced care. Recent recommendations concerning the care of HIV-infected patients have included the creation of regional centers for the care and treatment of AIDS patients.[20] Our results suggest that many primary care physicians are seeing a small number of HIV-infected patients in addition to the concentration of many patients among few providers and that care is being provided for both early and advanced disease. Further work is needed to define the quality of care being provided by primary care physicians to HIV-infected patients and to assess primary prevention activities directed toward at-risk patients. Whether the care of advanced cases should be centralized in tertiary care centers may depend on the results of such studies. In addition, studies of the quality of care being given to HIV-infected and at-risk patients by primary care physicians and subspecialists may allow the identification of areas of deficiency in care to which future training and continuing medical education efforts should be directed.

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